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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/667,596	09/22/2000	In Duk Song	2658-0190P	8013

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EXAMINER

NGUYEN, HOAN C

ART UNIT PAPER NUMBER

2871

DATE MAILED: 06/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/667,596

Applicant(s)

YOO ET AL.

Examiner

HOAN C. NGUYEN

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-31 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

Response to Arguments

Applicant's arguments with respect to the amended claim 1, 21 and 23 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Numano et al. (US6411346B1) in view of Kim et al. (US5995175A).

According to claims 1, 2, 7-10, 13, 16-19 and 21-22, Numano et al. teach (Figs. 14 and 15) a liquid crystal display (LCD) device comprising:

- a plurality of gate signal lines 2 formed on a substrate 1;
- a plurality of data/source lines 7 insulating from and intersecting the gate lines, the data lines and intersecting gate lines defining a plurality of cells, at least one cell including:
 - a pixel electrode formed metallic pattern connecting the storage electrode to the drain electrode (claim 22).
 - a thin film transistor (TFT) connecting to one of the data lines and one of gate lines defining the cell,

Art Unit: 2871

- a storage capacitor having storage electrode, which is formed on the gate line 2;
- a metallic pattern 8 including drain electrode of TFT and storage electrode of the storage capacitor and being electrically connected to the pixel electrode 12;

wherein metallic pattern is spaced a predetermined distance from the data line via the gate insulating layer 4;

- a protective layer 10 disposed between the pixel electrode and the metallic pattern,

wherein the pixel electrode is connected to a storage electrode part of metallic pattern via a first contact hole in the protective layer without including contact hole over a drain electrode (claims 7 and 8), and the drain electrode part has a smaller area than if the drain electrode part was electrically connected to the pixel electrode via a contact hole in the protective layer over the drain electrode (claim 9); the pixel electrode 139 has a larger aspect ratio than (expanding further into TFT region) if the drain electrode part was electrically connected to the pixel via a contact in the protective layer over the drain electrode (claim 10)

or

wherein, in the different forming process, the pixel electrode is connected to a drain electrode part of metallic pattern via a contact hole in the protective layer without concluding contact hole over a storage electrode, and the pixel electrode overlaps a gate lines less than if the protective layer included a contact hole over a storage electrode part of the metallic pattern.

According to claims 23, 25, 27-31, Numano et al. teach (Figs. 2-5, 14 and 15) a method of manufacturing a TFT substrate comprising:

- forming a plurality of gate signal lines 2 having gate electrode on a transparent/glass substrate 1;
- forming a gate insulating layer 4 on the gate electrode;
- forming a semiconductor layer 5/6 on the gate insulating layer;
- forming simultaneously a data/source line 7 having a source electrode 7, and a metallic pattern 8 including drain electrode part of TFT and storage electrode part of the storage capacitor in single layer;
- forming a semiconductor over at least a portion of one of the gate electrodes, at least a portion of one of the source electrode, and at least a portion of the drain electrode part in a single layer;
- forming a protecting film 10 over the entire surface with a first contact hole 175 (exposing the storage electrode part of the metallic pattern (claim 27), and a second contact hole exposing the drain electrode part of the metallic pattern (claims 29 and 30)
- forming a pixel electrode 12 over the protective film;

However, Numano et al. fail to disclose a metallic pattern surrounding the cell and storage electrodes overlapped with a portion of a periphery of the pixel electrode.

Kim et al. disclose Kim et al. disclose (Figs. 7 and 11) a metallic pattern surrounding the cell and this metallic pattern forms storage electrodes overlapped with a portion of a periphery of the pixel electrode for increasing the aperture ratio and contrast ratio of the LCD as compared with the conventional LCD.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a liquid crystal display (LCD) device with a metallic pattern surrounding the cell and this metallic pattern forms storage electrodes overlapped with a portion of a periphery of the pixel electrode for increase the aperture ratio and contrast ratio of the LCD as compared with the conventional LCD.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

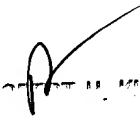
Art Unit: 2871

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HOAN C. NGUYEN whose telephone number is (703) 306-0472. The examiner can normally be reached on MONDAY-THURSDAY:8:00AM-4:30PM. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0530.

HOAN C. NGUYEN
Examiner
Art Unit 2871

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May 30, 2003


EXAMINER
10